

APPLICATION FOR UNITED STATES PATENT

OF

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SILVIO NUNEZ

FOR

DOME TRAP

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TO WHOM IT MAY CONCERN:

Be it known that I, SILVIO NUNEZ, a citizen of the United States of  
20 America, and a resident of the County of Los Angeles, State of California, have invented  
certain new and useful improvements in DOME TRAP and I do hereby declare the  
following to be a full, clear and exact description of the invention, as described and  
claimed in the following specification.

25 This application is a continuation-in-part of copending application numbers 10/094,471, filed on March 8, 2002, which itself is a continuation-in-part of prior application number 09/713,955 filed 11/16/2000, now abandoned.

### **BACKGROUND OF THE INVENTION**

Common household sinks in the bathroom and kitchen require a drain trap that  
30 trap solid waste matter, such as hair and other materials that commonly clog drains. The usual drain trap is a U-shaped pipe installed under most household, and other sinks. The U-shaped portion of the drain trap remains full of water, which provides a barrier against odors backing up from the sewer line through the sink.

If the common drain trap gets clogged, most persons try to use a chemical to  
35 dissolve the clog, such as "Drano" or "Liquid Plumber". Sometimes that works and sometimes it does not. Even if it works, it usually takes several hours or longer to take effect. If chemicals do not work, the trap is quite difficult to open to clean out, usually requiring a call to a plumber.

In addition, a special problem exists if something valuable, such as a ring, is  
40 dropped down the drain. The drain must be taken apart to retrieve the lost item, again by a plumber.

A spill free trap is described in U.S. Patent 5,159,724 to Vosper, dated Nov. 3, 1992, which shows a container trap. Vosper's concept is to provide a "spill free" trap designed so that water does not spill when the trap is opened. Having a spill free trap is  
45 virtually impossible, since the drain can be clogged to the top of the sink. The problem with Vosper's trap is that existing sink inlet line 30 must extend down below the water line. When the trap is moved up so that line 30 extends below the water line, outlet drain line

40 may not match up with the exit conduit (not numbered) of Vosper's trap. The inverse may also be true. If Vosper's device has to be moved down so as to match up with exit  
50 line 40, inlet line 30 may not extend below the water line, in which case the device will not function as a trap. Vosper has very little vertical adjustment available to match up with exit drain line 40.

Another device is shown by Uriarte 4,681,131 who discloses a complex floating body membrane which floats on the top of the water in the trap to stop the flow of sewer  
55 gases, so that the sink drain line does not have to extend below the water line in the trap.

The problem with the Uriarte device is that it requires moving parts with a membrane and the aid of the liquid to prevent sewer gases from going back up the drain line. Once assembled the Uriarte device cannot be disassembled lest the membrane fall out making reassembly quite difficult. There is no provision for cleaning out the trap, which may well  
60 contain foreign particles which may clog or foul the membrane. The trap of Uriarte is opened only at the time of manufacture, to install the membrane mechanism, and cannot be opened thereafter, as Uriarte shows no removable connection. Certainly, the homeowner cannot open the trap to clear it.

### **SUMMARY OF THE INVENTION**

65 Applicant's invention comprises a large dome shaped trap which can easily be opened by any person, simply by unscrewing the dome trap from its cover. The dome trap is threadably attached to its cover, as will be described, but requires only hand tightening, so that it is easily removed to clean the trap or retrieve a lost object.

In addition, replacing the normal U-shaped trap in a household sink is often not a  
70 easy task because the location of the exit line or conduit may not match up with the exit

line of the new trap. Applicant's trap comprises an internal conduit which allows the trap, when it is installed, to be highly vertically adjustable, and moved up or down a great distance, so that it easily matches the position of the fixed influent vertical drain line and the fixed horizontal effluent exit line of nearly every sink. An additional feature is the use  
75 of a flexible effluent exit line which adds to the adjustability of the dome trap of this invention.

Another feature comprises the dome portion being transparent, so that the user can see into the lower dome trap portion to see items that might have fallen into the trap and/or to see the extent of the build-up of waste, so that the user knows just when to  
80 clean it out.

Another feature comprises an indicator inside of the bottom of the dome, so that when the waste in the bottom of the trap covers the indicator, the user knows that it is time to clean the trap.

### **OBJECTS OF THE INVENTION**

85 Accordingly, several objects and advantages of the invention are as follows:

It is an object of the present invention to provide a drain trap for a common household sink which protects the household from sewer gasses, is easily installed, readily accessible, and easy to open to clean.

Another object of the invention is to provide such a device which is large enough to  
90 collect a substantial amount of waste which may easily be opened by hand if the drain becomes clogged.

Still a further object of the invention is to provide such a device which is significantly adjustable, so that it may be installed on any existing sink.

95     **BRIEF DESCRIPTION OF THE DRAWINGS**

Fig. 1 is a front view of the dome drain trap of this invention;

Fig. 2 is a cross-section of the drain trap and the incoming and outgoing lines to which it is attached;

Fig. 3 is a cross-section of another embodiment; and

100    Fig. 4 is a cross- section of another embodiment.

**DETAILED DESCRIPTION OF THE INVENTION**

Referring now to the drawings, there is shown a common household sink 10 having a faucet 12 and hot and cold water handles 14 and 16. Water drains from sink 10 down influent drain line tailpiece 18. Drain line 18 extends down into dome drain trap 20.

105    Dome drain trap 20 comprises a dome shaped lower trap bowl 22 and an upper cover 24. Lower dome shaped bowl 22 threadably connects to cover 24 at threaded connections 26 and 27, at which there is gasket seal 28. Dome 22 may be tightened by hand only, onto cover 24 and creates a perfectly water tight seal. Thus, it may be unscrewed and dome 22 removed without the use of any tools.

110           Dome trap 20 also comprises an internal vertical pipe or conduit 30 which is an integral part of cover 24 and runs from the top of cover 24 down into lower dome bowl 22, so that it extends below water line 25, well down into the weir 29 of dome 22, below effluent exit line 34 and below threaded connections 26 and 27 where cover 24 and dome 22 threadably connect. Vertical conduit 30 is formed monolithically as an integral part of

115    cover 24.

Dome trap 20 may be made of any convenient material, the most practical being

either ABS (Acrylonitril-butadiene-styrene) or PVC (Polyvinylchloride) plastic. The two parts of the trap are both injection molded. One part is the lower dome trap bowl 22. The other part is the cover 24 having internal vertical conduit 30 molded and manufactured as a part thereof.

Exit line 32 is also a part of dome trap 20, molded as a part of cover 24, adapted to be connected to an existing effluent exit drain line. Drain line 18 fits into vertical conduit 30 and is held by compression nut 36, which threadably attaches to cover 24 at threads 38. Compression nut 36 has an integrated plastic washer or a non-integrated plastic slip washer 40. Horizontal exit line 32 attaches to the existing building exit line (not shown) by compression nut located on the building effluent exit line.

Vertical conduit, drain line 30, for most sinks, is made slightly over 1½ inches in inside diameter, while the inside diameter of most standard sink drain lines, such as drain line 18, is 1½ inches. Because drain line 18 is usually made of metal its gauge will be very thin and drain line 18 will slide into vertical conduit 30 in a vertical direction. Vertical conduit 30 can be made very slightly larger in diameter, so that drain line 18 slides tightly but more easily into vertical conduit 30. By drain line 18 fitting tightly into vertical conduit 30, the entire assembly is more solid, secure and tight fitting, which makes removal of lower dome bowl 22 easier.

The ability to have drain line 18 slide into drain line 30, in the vertical direction, is critical, because when installing a new trap, lining up exit line 32 with the existing house or building effluent exit drain is absolutely necessary, to install a new trap, such as dome trap 20. Effluent exit drains that already exist in sink installations vary considerably in vertical location. Without the ability to slide dome trap 20 up and down on drain line 18, in

140 many cases it would be impossible to install a new trap, since the horizontal exit lines would not meet properly. Vertical line 30, molded as an internal part of cover 24, allows great adjustability in lining up exit drain line 32 and the existing building effluent exit line.

In addition, drain line 18 does not have to itself extend below the water line 25, since internal vertical conduit 30 does so, and drain line 18 only has to slide a small  
145 distance into vertical conduit 30 of cover 24 and be held by compression nut 36. This means 1) that drain lines which are short do not have to be modified and 2) exit line 32 can be easily matched up and connected to the existing house effluent exit drain line. This is of great value to a homeowner or plumber who is replacing the existing sink trap. Furthermore, those persons who want to install Applicant's dome trap in their sinks  
150 because of its ease in being opened for cleaning, can do so with ease. For the do-it-yourself homeowner, Applicant's dome trap is easy to install in any existing sink and it is easy to open and clean in the event of a clog. It is also easy to open to retrieve an item inadvertently dropped into the sink.

Long drain lines 18, on the other hand, can slide all the way down through vertical  
155 conduit 30 and even extend below its terminus 31.

Referring now to Fig. 3, there is shown another embodiment having additional, optional features where the lower dome bowl 22 is made of a transparent material, such as tempered glass or plastic, which gives the owner the benefit of being able to see what is present inside of lower dome bowl 22. If something is mistakenly dropped into the sink  
160 and falls into dome bowl 22, the owner may be able to see it and unscrew and remove dome bowl 22 to recover the item. Also, the owner can see the build-up of waste in the bottom of dome bowl 22 to determine exactly when to remove it for cleaning purposes.

An additional feature is the use of a flexible exit conduit line 35 where a flexible  
165 section 34 of line 32 is provided. This flexible section gives even more adjustability to  
dome trap 20, where the attachment to the building effluent drain line is hard to match up  
vertically or horizontally with exit conduit 32.

Referring now to Fig. 4, there is shown another embodiment in which a cone  
shaped indicator 37 is fixedly attached to the bottom of lower dome trap bowl 22. The  
170 height of indicator 37 is optional and is provided as an indicator of when the waste has  
built up to a height where the lower dome trap bowl should be unscrewed, removed and  
cleaned out. Indicator 37 is cone shaped, and formed or molded as a part of lower dome  
trap bowl 22, with the large end of the cone down, which also makes indicator 37 useful  
to push incoming water from inlet pipe 18, to the sides and up the sides of lower dome  
175 bowl 22.

Lower dome trap bowl 22 may be made in several different sizes and may be  
made larger and elongated for use in locations where more debris is likely to be present,  
such as sandy areas or where grease is present, such as in repair shops, and the like.

Exit line 32 must be equal to, or greater in diameter than inlet line 18. This is  
180 required by most building codes so that the exit line is able to carry as much water out,  
as comes in. Waste water 42, entering from drain line 18, will fill dome trap bowl 22 and  
clarified waste water will rise against gravity to crown weir level 49 or slightly above crown  
weir level 49, above exit line 32 and the existing building effluent exit line 34. As more  
water enters dome trap 20, it rises outside of internal conduit line 30, and passes out exit  
185 line 32.



If the drain or the trap becomes clogged, dome 22 can be unscrewed by hand to clean out the trap. When dome 22 is removed, water 42, which fills above the level of removable dome 22, will spill out, and a container such as a bucket, should be placed underneath the trap, when it is being opened.

190        Having thus described the invention,

I Claim: